British Museum (Natural History)

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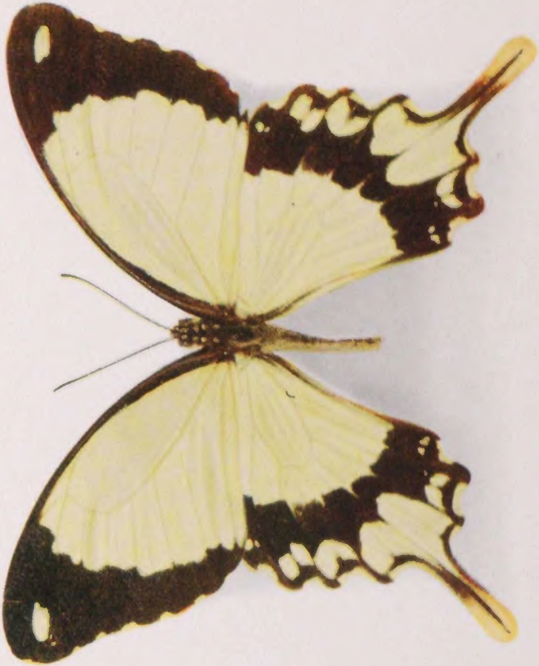
EXOTIC BUTTERFLIES

SERIES No. 6

5 *Cards in Colour*

Set E 39

One Shilling



EXOTIC BUTTERFLIES

Papilio dardanus (Male)

Natural size

BRITISH MUSEUM (NATURAL HISTORY)

E 211

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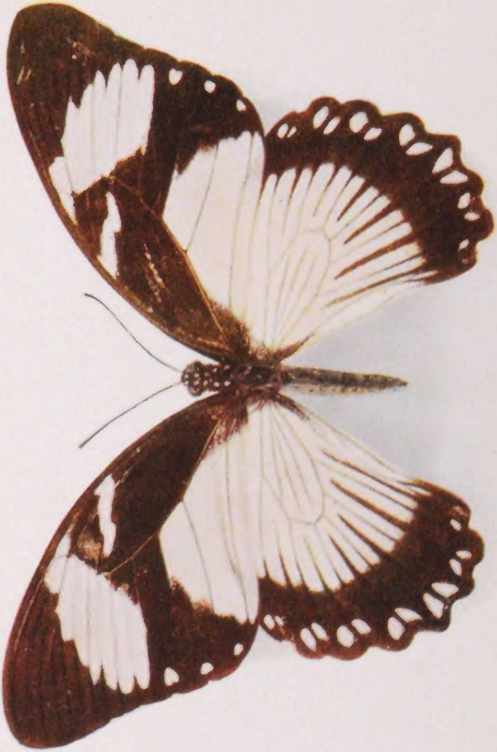

EXOTIC BUTTERFLIES
Papilio dardanus (Female, form *hippocoon*)
Natural size

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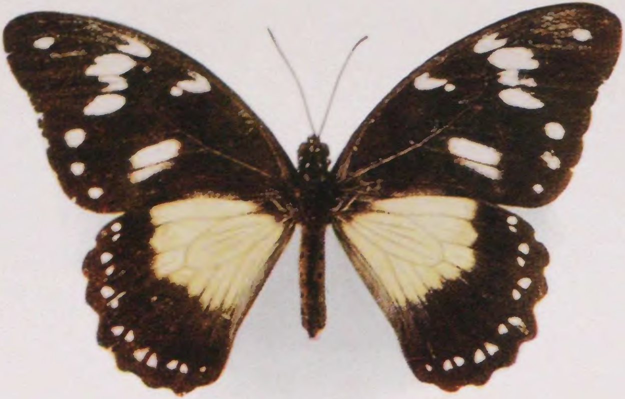

EXOTIC BUTTERFLIES

Papilio dardanus (Female, form *cenea*)
Natural size

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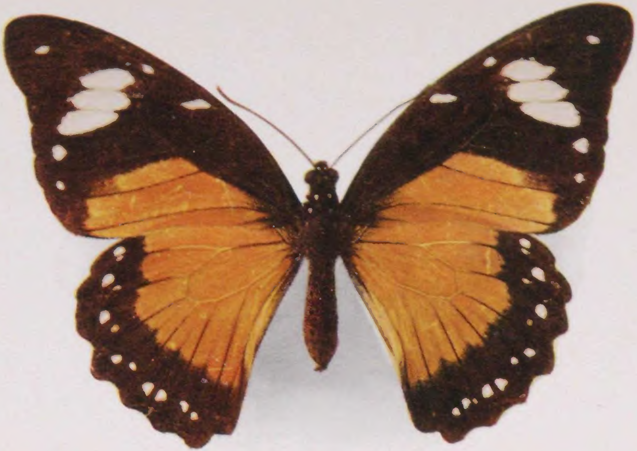

EXOTIC BUTTERFLIES
Papilio dardanus (Female, form *trophonius*)
Natural size

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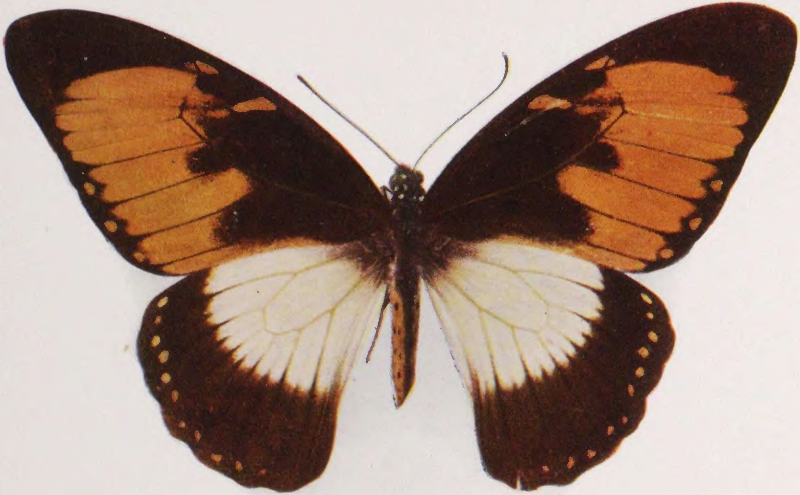

EXOTIC BUTTERFLIES

Papilio dardanus (Female, form *planemoides*)
Natural size

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BRITISH MUSEUM (NATURAL HISTORY).

EXOTIC BUTTERFLIES.

Series No. 6.

Mimicry in an African Swallow-tail Butterfly.

The theory of Mimicry amongst Butterflies owes its inception to the observations of the celebrated naturalist, H. W. Bates. In the valley of the Amazon, in South America, where he spent so many years of his life, there exists a very conspicuous group of Butterflies, known as the Ithomiinæ, which are characterised by their long, narrow wings and body, frail appearance, and feeble flight, but which nevertheless in the majority of cases are very conspicuously marked with bold patterns, principally of orange, black and yellow. After collecting large numbers of these, he found on examining them a certain number of other specimens amongst them, closely resembling them in appearance, but with fundamental structural characters showing them to belong to quite another family of butterflies, the Pieridæ, a family in the generally accepted view, typified by such species as the common Cabbage Whites. The *Origin of Species* having at that time but recently appeared, it was natural that Bates should turn to it for help in solving the problem. If natural selection were operating, the change in appearance of the Pierid butterflies, i.e., their mimicry of the Ithomiinæ, must be an advantage to them. It could only be an advantage to them if their models, the Ithomiines, had some especial form of protection from insect-eating animals which the mimics by virtue of their disguise would share. This appeared to Bates actually to be the case, for conspicuous and feeble as they were, the Ithomiines were seldom attacked by birds, being unpalatable and distasteful. The choice of the word mimicry with its implication of conscious action, to denote this adaptive variation, is a little unfortunate, for nothing could have been more remote from Bates' ideas on the subject than any such suggestion. His view was undoubtedly that the mimics owed their disguise solely to the action of natural selection.

Since the days of Bates innumerable cases of mimicry amongst insects have been brought to light, but it is doubtful whether any more remarkable are known than that of the African Swallow-tail Butterfly (*Papilio dardanus*), illustrated in this set of postcards.

Papilio dardanus.

E 211 male.

E 212 female, form *cenea.*

E 213 female, form *hippocoon.*

E 214 female, form *trophonius.*

E 215 female, form *planemoides.*

This comparatively common African Swallow-tail butterfly belongs to the Fluted Swallow-tail group (see Set E 30), and occurs practically throughout Continental Africa south of the Sahara. Except for some slight variation in the extent of its black markings, the male (E 211) is constant throughout its range. The female on the other hand assumes a number of very different forms, of which the four most important are shown on the accompanying postcards.

It will at once be noticed that none of these females bears any resemblance to the male, and none of them has a tail. In Madagascar, the Comoro Islands, Somaliland, and Abyssinia, however, there occur races of this species, possibly distinct species, but certainly of the same stock, in which the female is not only tailed, but coloured and marked almost exactly like the male. It is from this stock almost certainly that the Continental tailless females have been derived.

In South Africa three female forms *cenea* (E 212), *hippocoon* (E 213), and *trophonius* (E 214) occur, copying respectively the models *Amauris echeria*, *Amauris niavius*, and *Danais chrysippus*, all belonging to the distasteful family, Danaidæ, to which the South American Ithomiinæ already referred to, also belong. All three models fulfil the requirements of the mimicry theory, being very common, very conspicuous, and demonstrably distasteful to insectivorous animals. These models are not illustrated in this series of post cards, because the mimics so closely resemble them that little would be gained unless structural details were shown as well. Of these female forms two occur throughout the range of the species. On the west coast, however, where the model *Amauris echeria* does not occur, the *cenea* female which mimics it is also absent; on the other hand, the *hippocoon* female is extremely common, its model *Amauris niavius* being one of the most abundant butterflies of this region. As is natural in such a vast area geographical variations in the models occur, and these are faithfully copied by corresponding variations in the mimics inhabiting the same region.

The fourth form of female, *planemoides* (E 215) is met with only in the neighbourhood of Victoria Nyanza and westwards to the Congo Basin, where alone its model *Planema poggei* is found. In this case the model is not a Danaine butterfly, but an Acraeine; the

Acraeinæ are, however, quite as common, conspicuous and distasteful as the Danainæ, and far more numerous in species if not in individuals.

In addition to these four principal forms of the female many others exist, some mimetic, others non-mimetic. The latter are in the minority and consist in the main of forms intermediate between the dominant mimetic forms, or between these and the males. They form a kind of pool from which new mimetic forms may at any time be selected. One of the most interesting of them is the form named *trimeni*; this has the pattern approximately of *hippocoon*, but the white areas of that form are replaced by a yellow closely resembling that of the male. It is met with in Kenya Colony, but is almost confined to the Kikuyu Escarpment, where many primitive forms of the species occur, and it clearly indicates the line along which the mimetic females have developed from the original male-like tailed form. Experimental breeding has shown that all these mimetic forms may be bred from the same female or from different females, and that a single family may contain several of them.

Set E 39. *November*, 1925.

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